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09/692,554	10/19/2000	Wilf LeBlanc	36789/CAG/B600	5874

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ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
	09/692,554	LEBLANC ET AL.
Office Action Summary	Examiner	Art Unit	
	Joshua Kading	2661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____.

2a) ☐ This action is **FINAL.**   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle,* 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *See Continuation Sheet* is/are pending in the application.

　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *See Continuation Sheet* is/are rejected.

7) ☒ Claim(s) *3,5,7,13,14,39,42,46,52,66 and 78-88* is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on *19 October 2000* is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　a) ☐ All　b) ☐ Some * c) ☐ None of:

　　1. ☐ Certified copies of the priority documents have been received.

　　2. ☐ Certified copies of the priority documents have been received in Application No. _____.

　　3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *08/29/04, 02/17/04.*

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

Continuation of Disposition of Claims: Claims pending in the application are 1,3,5,7-9,11,13-15,21,23,27,29,31,33-35,37-39,41,42,44,46,48,50,52-54,60,62,64,66,68,71,73,74 and 78-88.

Continuation of Disposition of Claims: Claims rejected are 1,3,5,7-9,11,13-15,21,23,27,29,31,33-35,37-39,41,42,44,46,48,50,52-54,60,62,64,66,68,71,73,74 and 78-88.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement filed 8 August 2002 fails to comply with 37

CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each

5   publication or that portion which caused it to be listed; and all other information or that

portion which caused it to be listed. It has been placed in the application file, but the

information referred to therein has not been considered.

Drawings

10   The drawings are objected to because figures 26 and 27 are not readable; most

of the text is too small and thus not clear. Corrected drawing sheets in compliance with

37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the

application. Any amended replacement drawing sheet should include all of the figures

appearing on the immediate prior version of the sheet, even if only one figure is being

15   amended. The figure or figure number of an amended drawing should not be labeled as

"amended." If a drawing figure is to be canceled, the appropriate figure must be

removed from the replacement sheet, and where necessary, the remaining figures must

be renumbered and appropriate changes made to the brief description of the several

views of the drawings for consistency. Additional replacement sheets may be necessary

20   to show the renumbering of the remaining figures. The replacement sheet(s) should be

labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to

obstruct any portion of the drawing figures. If the changes are not accepted by the

examiner, the applicant will be notified and informed of any required corrective action in

the next Office action. The objection to the drawings will not be held in abeyance.

Specification

5   Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent
and should include that which is new in the art to which the invention pertains. If the
patent is of a basic nature, the entire technical disclosure may be new in the art, and the
10   abstract should be directed to the entire disclosure. If the patent is in the nature of an
improvement in an old apparatus, process, product, or composition, the abstract should
include the technical disclosure of the improvement. In certain patents, particularly
those for compounds and compositions, wherein the process for making and/or the use
thereof are not obvious, the abstract should set forth a process for making and/or use
15   thereof. If the new technical disclosure involves modifications or alternatives, the
abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of
the invention and should not compare the invention with the prior art.
20
Where applicable, the abstract should include the following:
(1) if a machine or apparatus, its organization and operation;
(2) if an article, its method of making;
(3) if a chemical compound, its identity and use;
25   (4) if a mixture, its ingredients;
(5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

30   It is noted that applicant's abstract does disclose varying embodiments within the

disclosure. However, the specific embodiment claimed by applicant in the instant

application is not described by the abstract. It is therefore, suggested that applicant

rewrite the abstract to more accurately reflect the claimed invention.

35   *Claim Objections*

Claims 3, 5, 7, 13, 14, 39, 42, 46, 52, 66, and 78-88 are objected to because of

the following informalities:

Claim 3, line 2 states "second portions frames, and". Frames should be deleted.

Line 3 should read --second portions, and--.

Claim 13, line 4 states "the fame". This should be changed to --the frame--.

Claims 7, 13, and 52, lines 5 and 6 each state "the detection". For clarity this

should be changed to --the detection step-- or --the detection process--.

Claim 14, line 5; and claim 39, line 9 state "determining frequency" and

"determine frequency", respectively. These should be changed to --determining a

frequency-- and --determine a frequency--, respectively.

Claim 42, line 2 states "first component to a first component to a complex signal".

This doesn't make sense. It should read --first component to a complex signal--.

Claim 5, line 5; and claim 46, line 7 states "comprises a tone." To avoid confusion

in dependent claims that make reference to "the tone", "comprises a tone" should be

changed to --comprises the tone-- because the preamble of both claims already

discloses "a tone".

Claim 66, lines 3-4 state "to detect the tone in the second portion of the

samples." There is no antecedent basis for "the samples". Since claim 66 is similar to

claim 27, it is assumed the structure of claim 27 is how claim 66 is supposed to read.

Therefore, it is suggested that claim 66 replace "to detect the tone in the second portion

of the samples." with --to detect the tone in the second portion of the separated

component.--

Claims 78-88 do not indicate, directly for each claim, the status of each claim.

Applicant is reminded that when amendments are filed, each and every claim must have

in brackets or parenthesis, at the beginning of each claim, a status identifier for that

claim. Therefore, claims 78-88 should have had "(New)" appended to the beginning of

5   each claim. If amended claims are filed in response to this Office Action, each and

every claim must have an appropriate status identifier at the beginning of each claim.

See MPEP 714.

Appropriate correction is required.

10   ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed
15   publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1, 3, 5, 8, 9, 11, 14, 27, 31, 46, 48, 50, 53, 64, 66, 78-83, 87, and 88 are

rejected under 35 U.S.C. 102(a) as being anticipated by Mark (U.S. Patent 5,949,874).

20

Regarding claim 1, Mark ('874) discloses "a method for detecting a tone in a

composite signal having a plurality of components (figure 4B where the signal 600 has a

plurality of different components) comprising:

separating one of the components from the composite signal (figure 4B, where

each component is handled separately, for example component 604 is used to handle

the convey the destination of the signal this can be further read in col. 17, lines 3-23);

and

5   detecting from a portion of the separated component whether the separated

component comprises the tone (col. 10, lines 12-30 describes that the dtmf signal

component of figure 4B where portions of it are further detected as read in col. 11, lines

14-28)."

10   Regarding claim 46, Mark ('874) discloses "computer-readable media embodying

a program of instructions executable by a computer (col. 8, lines 33-42) to perform a

method for detecting a tone in a composite signal having a plurality of components

(figure 4B where the signal 600 has a plurality of different components) comprising:

separating one of the components from the composite signal (figure 4B, where

15   each component is handled separately, for example component 604 is used to handle

the convey the destination of the signal this can be further read in col. 17, lines 3-23);

and

detecting from a portion of the separated component whether the separated

component comprises the tone (col. 10, lines 12-30 describes that the dtmf signal

20   component of figure 4B where portions of it are further detected as read in col. 11, lines

14-28)."

Regarding claims 3 and 48, Mark ('874) discloses the method of claim 1 and the

computer program of claim 46. Mark ('874) further discloses "formatting the separated

component into a frame having first and second portions (figure 3A, which represents a

part of the DTMF signal of figure 4B and where each component has been formatted

5   into at least two portions, for example portions 500 and 502), and wherein the tone

detection comprises detecting from the second portion of the frame whether the

separated component comprises the tone (col. 11, lines 14-28 describes the detecting

the tone in a corresponding portion, each low and high frequency tone is detected

separately and thus determined if a valid tone is detected from the corresponding

10   second portion)."

Regarding claims 5 and 50, Mark ('874) discloses the method of claim 1 and the

computer program of claim 46. Mark ('874) further discloses "formatting the separated

component into first and second frames, the first frame preceding the second frame in

15   time (figure 3A, which represents a part of the DTMF signal of figure 4B and where each

component has been formatted into at least two frames separated in time, for example

frames 500 and 502), each of the first and second frames having first and second

portions (figure 3A, each frame 500 and 502 has at least two portions, elements 501

and 503), and wherein the tone detection comprises detecting from the second portion

20   of the first frame whether the separated component comprises [the] tone (col. 11, lines

14-28 describes the detecting the tone in the corresponding portion, each low and high

frequency tone is detected separately and thus the tone is determined to be a valid tone

from the corresponding second portion)."

Regarding claim 8, Mark ('874) discloses "a method of dual tone signal detection

5   in a composite signal having first and second components (figure 4B where the signal

600 has a plurality of different components where the DTMF signal has a dual tone

structure comprising high and low frequencies), comprising:

separating the composite signal into its first and second components (figure 4B,

where each component is handled separately, for example component 604 is used to

10   handle the convey the destination of the signal this can be further read in col. 17, lines

3-23);

detecting from a portion of the first component whether the first component

comprises a first one of the dual tones (col. 10, lines 12-30 describes that the dtmf

signal component of figure 4B where a first tone of the component is further detected as

15   read in col. 11, lines 14-28); and

detecting from a portion of the second component whether the second

component comprises a second one of the dual tones (col. 10, lines 12-30 describes

that the dtmf signal component of figure 4B where a second tone of the component is

further detected as read in col. 11, lines 14-28)."

20

Regarding claim 9, Mark ('874) discloses "the method of claim 8 further

comprising formatting the first component into a frame having first and second portions

(figure 3A, which represents a part of the DTMF signal of figure 4B and where each

component has been formatted into at least two portions, for example portions 500 and

502), and wherein the detection of the first one of the dual tones comprises detecting

from the second portion of the frame whether the first component comprises the first

5   one of the dual tones (col. 11, lines 14-28 describes the detecting the tone in a

corresponding portion, each low and high frequency tone is detected separately and

thus determined if a valid tone is detected from the corresponding second portion)."

Regarding claim 11, Mark ('874) discloses "the method of claim 8 further

10   comprising formatting the first component into first and second frames, the first frame

preceding the second frame in time (figure 3A, which represents a part of the DTMF

signal of figure 4B and where each component has been formatted into at least two

frames separated in time, for example frames 500 and 502), each of the first and

second frames having first and second portions (figure 3A, each frame 500 and 502 has

15   at least two portions, elements 501 and 503), and wherein the detection of the first one

of the dual tones comprises detecting from the second portion of the first and second

frames whether the first component comprises the first one of the dual tones (col. 11,

lines 14-28 describes the detecting the tone in the corresponding portion, each low and

high frequency tone is detected separately and thus the tone is determined to be a valid

20   tone from the corresponding second portion)."

Regarding claim 31, Mark ('874) discloses "a system for detecting a tone in a composite signal having first and second components (figure 4B where the signal 600 has a plurality of different components where the DTMF signal has a dual tone structure comprising high and low frequencies), comprising:

5 separating means for separating the composite signal into its first and second components (figure 2B, element 302 is shown separating the signal into two components);

determination means for determining a frequency for each of the separated first and second components (figure 2B, elements 308 and 310; the description of elements

10 308 and 310 is read in col. 11, lines 14-28); and

detection means for detecting as a function of the determined frequency for each of the first and second components whether either of the first and second components comprises the tone (figure 2B, element 312; the description of element 312 is read in col. 11, lines 29-42)."

15

Although claim 14 is a method claim and claim 31 is a means plus function claim, the limitations of claim 14 are identical to the function limitations in claim 31. Therefore, the corresponding limitations of claim 14 in claim 31 are rejected for the same reasons as those in claim 31.

20

Regarding claim 53, Mark ('874) discloses "computer-readable media embodying a program of instructions executable by a computer (col. 8, lines 33-42) to perform a

method for detecting a tone in a composite signal having first and second components

(figure 4B where the signal 600 has a plurality of different components where the DTMF

signal has a dual tone structure comprising high and low frequencies), comprising:

      separating the composite signal into its first and second components (figure 2B,

5   element 302 is shown separating the signal into two components);

      determining a frequency for each of the separated first and second components

(figure 2B, elements 308 and 310; the description of elements 308 and 310 is read in

col. 11, lines 14-28); and

      detecting as a function of the determined frequency for each of the first and

10   second components whether either of the first and second components comprises the

tone (figure 2B, element 312; the description of element 312 is read in col. 11, lines 29-

42)."

      Regarding claims 78, 82, and 87, Mark ('874) discloses the method of claim 14,

15   the computer program of claim 53, and the system of claim 31. Mark ('874) further

discloses "estimating a characteristic different from the frequency for each of the first

and second components, wherein the tone detection is further a function of the

estimated characteristic (figure 3A, where the amplitude or energy of each portion is a

unique characteristic to that portion and helps to define that portion, this is carried out

20   by element 302 of figure 2B and a further description of amplification can be found in

col. 13, lines 18-35)."

Regarding claims 79, 83, and 88, Mark ('874) discloses the method of claim 78,

the computer program of claim 82, and the system of claim 87. Mark ('874) further

discloses "the characteristic comprises power (figure 3A and col. 13, lines 18-35 where

amplitude or energy is the power of the portion)."

5

Regarding claim 80, Mark ('874) discloses "the tone detection further comprises

comparing the estimated power for each of the first and second components to a

threshold (col. 13, lines 54-67 where the amplification levels stored in memory are

thresholds used to compare the incoming signals to see if they match up, and if they

10   don't use the amplification levels to adjust them)."

Regarding claim 81, Mark ('874) discloses "a system for detecting a tone in a

composite signal having a plurality of components (figure 4B where the signal 600 has a

plurality of different components) comprising:

15   a filter to separate one of the components from the composite signal (figure 3B,

element 304 separates the high frequency components of the signal); and

a detector to detect from a portion of the separated component whether the

separated component comprises the tone (figure 3B, element 308 analyses a portion of

the component to see if there is a high frequency component)."

20

Regarding claim 64, Mark ('874) discloses "a data transmission system,

comprising:

a telephony device having a composite signal output comprising a plurality of

components (figure 2B, element 120 has a composite signal output as that of figure 4B);

and

a signal processing system coupled to the telephony device (figure 2B, element

5   112), the signal processing system comprising a detector to separate one of the

components from the composite signal and detect from a portion of the separated

component whether the separated component comprises a tone (figure 2B, element 308

uses the filtered component to separate and analyze a portion of the signal for high

frequency tone).

10

Regarding claims 27 and 66, Mark ('874) discloses the systems of claims 81 and

64. Mark ('874) further discloses "the separated component comprises first and second

portions, and the signal processing system further comprising a state machine to invoke

the detector [to detect the tone in the second portion of the separated component]

15   (figure 2B, element 104 acts as a state machine by controlling the tone detector in

response to signals that indicate a change in state, this can be read in col. 9, lines 34-

44 and 54-58)."

Claim Rejections - 35 USC § 103

20   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set
forth in section 102 of this title, if the differences between the subject matter sought to be patented and
the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains.
Patentability shall not be negatived by the manner in which the invention was made.

5   Claims 21, 35, 60, and 84 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Mark (U.S. Patent 5,949,874).

        Regarding claims 21, 60, and 84, Mark ('874) discloses the method of claim 79,

the computer program of claim 88, and the system of claim 31. However, Mark ('874)

10   does not disclose "comparing a ratio of the power estimation for the first and second

components to a threshold." Although Mark ('874) does not disclose the "ratio", he does

disclose that the difference between the first and second components, or the twist, is

compared against a threshold (col. 13, lines 56-67). It would have been obvious to one

with ordinary skill in the art at the time of invention to have the ratio of the power

15   estimates compared against a threshold instead of the difference as a matter of design

choice. The reason is because the object of comparing the two components power

estimates is to determine if they fall within an acceptable range. Whether this is done

using ratios or differences is up to the designer, the same result of identifying where the

components lie relative to a threshold is achieved. The motivation for wanting to know

20   how the components compare to a threshold is so that negative effects of too much

"twist" can be avoided (col. 11, lines 1-7).

        Regarding claim 35, Mark ('874) discloses the system of claim 31. However,

Mark ('874) lacks that the "separating means comprises a first bandpass filter to pass

the first component and a second bandpass filter to pass the second component."

Although Mark ('874) does not disclose that the filters reside in the separating means,

he does disclose that there is "a first band pass filter to pass the first component (figure

2B, element 304; col. 10, lines 12-21) and a second bandpass filter to pass the second

5   component (figure 2B, element 306; col. 10, lines 12-21)." It would have been obvious

to one with ordinary skill in the art to take the separate bandpass components and

combine them with the separating means as a matter of design choice. Whether the

bandpass filters are within the separating means or directly connected to it does not

effect the end result. The separated and filtered components would be the same in both

10   cases.

       Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mark

(U.S. Patent 5,949,874) in view of Tsai et al. (U.S. Patent 6,393,124 B1).

       Regarding claim 37, Mark ('874) discloses the system of claim 31. However,

15   Mark ('874) lacks what Tsai discloses "means for down sampling the separated first and

second components prior to the frequency determination (figure 2, element 26 as seen

comes before the detection logic 36, i.e. frequency determination)." It would have been

obvious to one with ordinary skill in the art at the time of invention to include the down

sampling for the purpose of reducing the number of samples in the signal. The

20   motivation for reducing the number of samples in the signal is to reduce the

computational load on later processing (Tsai, col. 4, lines 18-26).

Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mark

(U.S. Patent 5,949,874) in view of McCarthy (U.S. Patent 5,333,191).

Regarding claim 34, Mark ('874) discloses the system of claim 31. However,

Mark ('874) lacks what McCarthy discloses, "means for converting the first and second

5   components to complex signals prior to the frequency determination (figure 1, elements

202-210 in conjunction with one another take the received signal from element 102 and

convert it into a complex signal before detecting the tones in element 300, the process

for this can be read in col. 3, lines 54-col. 8, lines 1-31 with particular emphasis on col.

8, lines 1-31 where it shows the signal in its complex form (equation 15) and how the

10   tones are detected from that)." It would have been obvious to one with ordinary skill in

the art at the time of invention to have the signal converted to its complex form before

detecting the tones for the purpose of being able to detect the tones. The motivation for

converting to a complex signal to detect the tones is one of feasibility, it is much easier

to detect frequency tones in a signal by first converting it to a complex signal than it is to

15   detect the tones from the straight received signal.

Claims 7, 13, 29, 52, and 68 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Mark ('874) in view of Bremer et al. (U.S. Patent 5,311,578).

20   Regarding claims 7, 13, and 52, Mark ('874) discloses the method of claim 1, the

method of claim 13 and the computer program of claim 46. However, Mark ('874) further

discloses "formatting the first component into first and second frames, the first frame

preceding the second frame in time (figure 3A, which represents a part of the DTMF

signal of figure 4B and where each component has been formatted into at least two

frames separated in time, for example frames 500 and 502), each of the first and

second frames having first and second portions, the first portion of the frame precedes

5   the second portion of the [frame] in time for each of the first and second frame (figure

3A, each frame 500 and 502 has at least two portions separated in time from one

another, elements 501 and 503)..."

However, Mark ('874) lacks what Bremer discloses "bypassing the detection

[step] of the first one of the dual tones for the first portion of the second frame if the

10   detection [step] for the first one of the dual tones does not detect the first one of the dual

tones in the second portion of the first frame (figure 4, steps 510 and 525 where in step

510 there is no tone detected, thus it skips all other portions looking for tones and goes

to step 525)."

It would have been obvious to one with ordinary skill in the art at the time of

15   invention to include the bypassing of the portion for the purpose of continuing on with

processing of information. The motivation for continuing on with the processing of

information is so that resources are not wasted (Bremer, col. 6, lines 45-47 the not

wasting resources is implied by the fact that there is a time limit associated with the

detection of a tone).

20

Regarding claims 29 and 68, Mark ('874) discloses the system of claim 81 and

the system of claim 64. Mark ('874) further discloses "first and second frames, the first

frame preceding the second frame in time (figure 3A, which represents a part of the

DTMF signal of figure 4B and where each component has been formatted into at least

two frames separated in time, for example frames 500 and 502), each of the first and

second frames having first and second portions (figure 3A, each frame 500 and 502 has

5   at least two portions, elements 501 and 503), the tone detection system further

comprising a state machine to invoke the detector to detect the tone in the second

portion of the first frame (figure 2B, element 104 acts as a state machine by controlling

the tone detector in response to signals that indicate a change in state, this can be read

in col. 9, lines 34-44 and 54-58)..."

10   However, Mark ('874) lacks what Bremer discloses, "...to invoke the detector to

process the tone in the first portion of the second frame only if the detector detects the

tone in the second portion of the first frame (figure 4, elements 510, 525, and 530 where

it is seen that if the tone is detected at 510 then the detector can proceed with the

detection of other tones in other portions of frames)."

15   It would have been obvious to one with ordinary skill in the art at the time of

invention to include the detecting of a tone in a second portion if there was a tone in a

first portion for the purpose of further identifying the information sent in the composite

signal. The motivation for further identifying the information would be, for instance, to

completely decode a destination number sent as a plurality of tones in frames so as to

20   begin setup and connection of a call (Mark ('874), col. 17, lines 7-12).

Claims 15, 23, 33, 38, 39, 41, 54, 62, 71, 73, 85, and 86 are rejected under 35

U.S.C. 103(a) as being unpatentable over Mark (U.S. Patent 5,949,874) in view of Mark

(U.S. Patent 5,583,933).

5   Regarding claims 15 and 54, Mark ('874) discloses the method of claim 14 and

the computer program of claim 53. However, Mark ('874) lacks what Mark ('933)

discloses, "comparing the determined frequency of each of the separated first and

second components to a plurality of frequency ranges to determine whether either of the

first and second components comprises the tone (figure 8B shows a table of acceptable

10   frequency ranges for detecting and determining which frequency has been received; a

more detailed description can be read in col. 16, lines 65-col. 17, lines 1-16)." It would

have been obvious to one with ordinary skill in the art at the time of invention to include

the frequency ranges for the purpose of rejecting tones that are outside the acceptable

range. The motivation for doing this is so that there is minimal error in detecting tones

15   properly.

Regarding claim 39, Mark ('874) discloses "a system of detecting a dual tone in a

composite signal having first and second components, comprising:

a first bandpass filter to separate the first component from the composite signal

20   (figure 2B, element 304);

a second bandpass filter to separate the second component from the composite

signal (figure 2B, element 306);

a first detector to determine frequency of the separated first component (figure

2B, element 308);

a second detector to determine frequency of the separated second component

(figure 2B, element 310)..."

5   However, Mark ('874) lacks what Mark ('933) discloses, "a first comparator to

compare the frequency of the first component to at least one of a plurality of frequency

ranges to determine whether the separated first component comprises one of the dual

tones (col. 16, lines 65-col. 17, lines 1-16 where the table of figure 8B shows the

acceptable ranges for frequencies and although it is not explicitly stated that there is a

10   first comparator to determine what tone is detected, it is strongly implied by the tables

there must be one); and a second comparator to compare the frequency of the

separated second component to at least one of the frequency ranges to determine

whether the second component comprises the other one of the dual tones (col. 16, lines

65-col. 17, lines 1-16 where the table of figure 8B shows the acceptable ranges for

15   frequencies and although it is not explicitly stated that there is a second comparator to

determine what tone is detected, it is strongly implied by the tables there must be one)."

It would have been obvious to one with ordinary skill in the art at the time of

invention to include the comparators for the purpose of determining if the detected

frequencies are indeed within a range of acceptable frequencies. The motivation for

20   determining whether or not the detected frequency is within an acceptable range is so

that a tone is not detected in error.

Regarding claim 71, Mark ('874) discloses "a system for transmitting a dual tone,

comprising:

a telephony device having a composite signal output comprising first and second

components (figure 2B, element 120 has a composite signal output as that of figure 4B);

5   and

a signal processing system coupled to the telephony device (figure 2B, element

112), the signal processing system comprising,

a first bandpass filter to separate the first component from the composite

signal (figure 2B, element 304),

10   a second bandpass filter to separate the second component from the

composite signal (figure 2B, element 306),

a first power estimator to estimate power of the separated first component

(figure 3A, where the amplitude or energy of each portion is a unique

characteristic to that portion and helps to define that portion, this is carried out by

15   element 302 of figure 2B and a further description of amplification can be found

in col. 13, lines 18-35),

a second power estimator to estimate power of the separated second

component (figure 3A and col. 13, lines 18-35, where the amplitude or energy of

each portion is a unique characteristic to that portion and helps to define that

20   portion; it should be noted that although there aren't two distinct power

estimators, it would have been obvious to have two as a matter of design

choice),

a first detector to determine frequency of the separated first component

(figure 2B, element 308),

a second detector to determine frequency component (figure 2B, element

310)..."

5   However, Mark ('874) lacks what Mark ('933) discloses, "a first comparator to

compare the determined frequency of the first component respectively to a power

threshold and frequency range to determine whether the first component comprises one

of the dual tones (col. 16, lines 65-col. 17, lines 1-16 where the tables of figures 8B-8E

show the acceptable and rejectable ranges for frequencies and although it is not

10   explicitly stated that there is a first comparator to determine what tone is detected, it is

strongly implied by the tables there must be one), and a second comparator to compare

the estimated power and determined frequency of the second component respectively

to a power threshold and frequency range to determine whether the second component

comprises the other one of the dual tones (col. 16, lines 65-col. 17, lines 1-16 where the

15   tables of figures 8B-8E show the acceptable and rejectable ranges for frequencies and

although it is not explicitly stated that there is a second comparator to determine what

tone is detected, it is strongly implied by the tables there must be one)."

It would have been obvious to one with ordinary skill in the art at the time of

invention to include the comparators for the purpose of determining if the detected

20   frequencies are indeed within a range of acceptable frequencies. The motivation for

determining whether or not the detected frequency is within an acceptable range is so

that a tone is not detected in error.

Regarding claims 23, 33, 41, 62, and 73, Mark ('874) discloses the method of

claim 14, the system of claim 31, and the computer program of claim 53. Mark ('874)

and Mark ('933) disclose the system of claim 39 and the system of claim 71. However,

5   Mark ('874) lacks what Mark ('933) further discloses, "means for (figure 8B, where the

frequency ranges are determined to be acceptable within the detector as shown)..." and

"...estimating a mean deviation of frequency deviation from one of a plurality of

frequencies for each of the separated first and second components and compares the

estimated mean for each of the separated first and second components to a respective

10   threshold (col. 16, lines 65-col. 17, lines 1-16 and figure 8B shows a table of acceptable

frequency ranges frequency ranges for detecting and determining which frequency has

been received, and although the ranges or acceptability are not labeled as a "mean

deviation" they can be considered as such because they represent a tolerance

(deviation) surrounding a nominal (mean) frequency, thus, just as with a "mean

15   deviation", the nominal tolerance functions to accept detected frequencies within a given

range)."

It would have been obvious to one with ordinary skill in the art at the time of

invention to include the frequency ranges as a "mean deviation" for the purpose of

rejecting tones that are outside the acceptable range. The motivation for doing this is so

20   that there is minimal error in detecting tones properly.

Regarding claim 38, Mark ('874) discloses the system of claim 31. However,

Mark ('874) lacks what Mark ('933) discloses, "means for comparing the determined

frequency of each of the first and second components to a plurality of frequency ranges

to determine whether either of the first and second components comprises the tone

5   (figure 8B shows a table of acceptable frequency ranges for detecting and determining

which frequency has been received and it is further disclosed in figure 8B that this is

done in the detector; a more detailed description can be read in col. 16, lines 65-col. 17,

lines 1-16)." It would have been obvious to one with ordinary skill in the art at the time of

invention to include the frequency ranges for the purpose of rejecting tones that are

10   outside the acceptable range. The motivation for doing this is so that there is minimal

error in detecting tones properly.

Regarding claim 85, Mark ('874) and Mark ('933) disclose the system of claim 39.

Mark ('874) further discloses, "a first power estimator to the estimate power of the

15   separated first component (figure 3A, where the amplitude or energy of each portion is a

unique characteristic to that portion and helps to define that portion, this is carried out

by element 302 of figure 2B and a further description of amplification can be found in

col. 13, lines 18-35)". However, Mark ('874) lacks what Mark ('933) further discloses,

"the first comparator further comparing the estimated power of the separated first

20   component to a power threshold, the determination of whether the separated first signal

comprises said one of the tones being further a function of the comparison (col. 16,

lines 65-col. 17, lines 1-16 where the tables of figures 8B-8E show the acceptable and

rejectable ranges for frequencies and although it is not explicitly stated that there is a

first comparator to determine what tone is detected, it is strongly implied by the tables

there must be one)."

It would have been obvious to one with ordinary skill in the art to include the

5   further function of the first comparator for the same reasons and motivation as in claim

39.

Regarding claim 86, Mark ('874) and Mark ('933) disclose the system of claim 39.

However, Mark ('933) lacks what Mark ('874) further discloses "first...power estimators

10   each estimating power of a respective one of the first and second separated

components (figure 3A, where the amplitude or energy of each portion is a unique

characteristic to that portion and helps to define that portion, this is carried out by

element 302 of figure 2B and a further description of amplification can be found in col.

13, lines 18-35)..." Mark ('874) however, does not explicitly disclose a "second power

15   estimator" and "a twist estimator to compare a ratio of the estimated power for the first

and second components, the determination of whether the composite signal comprises

the dual tone being further a function of the comparison."

Although Mark ('874) does not disclose the "second power estimator" he does

disclose a first power estimator, and since they perform the same function it would have

20   been obvious to include another power estimator as a matter of design choice. As seen

in figure 2B of Mark ('874) there are two components separated where the power has

been estimated previously by element 302. It would have been obvious to one with

ordinary skill in the art at the time of invention to split the incoming signal before

estimating the power, thus requiring two power estimators, as a matter of design choice.

Further, Mark ('874) does not explicitly disclose the "twist...ratio", he does

disclose that the difference between the first and second components as the twist and

5   this is compared against a threshold (col. 13, lines 56-67). It would have been obvious

to one with ordinary skill in the art at the time of invention to have the ratio of the power

estimates compared against a threshold instead of the difference as a matter of design

choice. The reason is because the object of comparing the two components power

estimates is to determine if they fall within an acceptable range. Whether this is done

10   using ratios or differences is up to the designer, the same result of identifying where the

components lie relative to a threshold is achieved. The motivation for wanting to know

how the components compare to a threshold is so that negative effects of too much

"twist" can be avoided (col. 11, lines 1-7).

15   Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mark

('874) and Mark ('933) as applied to claim 39 above, and further in view of Tsai et al.

Regarding claim 44, Mark ('874) and Mark ('933) disclose the system of claim 39.

However, Mark ('874) and Mark ('933) lack what Tsai discloses, "a first down sampler to

down sample the separated first component prior to the frequency determination by the

20   first detector (figure 2, element 26 as seen comes before the detection logic 36, i.e.

frequency determination)..." Tsai however, does not explicitly disclose "a second down

sampler to down sample the separated second component prior to the frequency

determination by the second detector."

Although Tsai does not disclose the "second down sampler" he does disclose a

first down sampler, and since they perform the same function it would have been

5   obvious to include another down sampler as a matter of design choice. As seen in figure

2 of Tsai there are two components that have been separated where the down sampling

has taken place. It would have been obvious to one with ordinary skill in the art at the

time of invention to split the incoming signal before down sampling, thus requiring two

down sampler, as a matter of design choice.

10   It would have been obvious to one with ordinary skill in the art at the time of

invention to include the down sampling for the purpose of reducing the number of

samples in the signal. The motivation for reducing the number of samples in the signal

is to reduce the computational load on later processing (Tsai, col. 4, lines 18-26).

15   Claims 42 and 74 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Mark (U.S. Patent 5,949,874) and Mark (U.S. Patent 5,583,933) as applied to

claims 39 and 71 above, and further in view of McCarthy (U.S. Patent 5,333,191).

Regarding claims 42 and 74, Mark ('874) and Mark ('933) disclose the system of

claim 39 and the system of claim 71. However, Mark ('874) and Mark ('933) lack what

20   McCarthy discloses, "a first summer to convert the separated first component to a first

complex signal prior to the first power estimation and frequency determination (figure 1,

elements 202-210 in conjunction with one another take the received signal from element

102 and convert it into a complex signal before detecting the tones in element 300, the

process for this can be read in col. 3, lines 54-col. 8, lines 1-31 with particular emphasis

on col. 8, lines 1-31 where it shows the signal in its complex form (equation 15) and how

the tones are detected from that), and a second summer to convert the separated

5   second component to a second complex signal prior to the second power estimation

and frequency determination (although McCarthy does not disclose a second "summer"

to convert the signal to its complex form, he does disclose the first "summer", therefore

it would have been obvious to one with ordinary skill in the art at the time of invention to

include the second summer if there had been two components because each

10   component would need to be converted and as a matter of design choice, two

"summers" would be faster than one)."

It would have been obvious to one with ordinary skill in the art at the time of

invention to have the signal converted to its complex form before detecting the tones for

the purpose of being able to detect the tones. The motivation for converting to a

15   complex signal to detect the tones is one of feasibility, it is much easier to detect

frequency tones in a signal by first converting it to a complex signal than it is to detect

the tones from the straight received signal.

Any inquiry concerning this communication or earlier communications from the

20   examiner should be directed to Joshua Kading whose telephone number is (571) 272-

3070. The examiner can normally be reached on M-F: 8:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Kenneth Vanderpuye can be reached on (571) 272-3078. The fax phone

number for the organization where this application or proceeding is assigned is 703-

872-9306.

5   Information regarding the status of an application may be obtained from the

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10   you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Joshua Kading
Examiner
Art Unit 2661

September 16, 2004
15

KENNETH VANDERPUYE
PRIMARY EXAMINER